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Outlook for the interaction of science, business and state in building innovative economy in Russia

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Abstract

The strategy of development Russia has chosen the course of innovations, however, the ways of creating innovation economy and the theoretical background are not clear yet. However, the triple helix theory is the most acceptable for Russia. The triple helix system can be easily applied to different spheres of economy. Some spheres of Russian economy can use the triple helix system. An example can be found in the field of bridge development. This example is the cable-stayed bridge in Vladivostok. This article can be interesting to economists, students and concerned people in the developing of the triple helix model.

Keywords: Russian economy; innovation; integration; transport industry; public instruments.

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1.Introduction.

The prospects of the Russian economy, having a great intellectual potential, are related to the actualization of this potential, the overcoming of the dependence on the export of raw material resources, the development of the high technology sector, and the maintenance of high rates of economic growth on this basis.

Nowadays, it is vital to investigate into the integration of the science, the State and business communities. Among the priority tasks Russia is currently faced with are the preservation of the country's scientific potential, and the necessary transformation of the real sector of economy on the basis of high technologies. The mentioned transformation requires the creation of new methods and approaches to the economic backing of the scientific production integration. The examples of foreign countries demonstrate that the integration of the science, the State and business communities favours the country's technological potential growth, thus leading to a general increase in the economic efficiency. As a result, countries that use the abovementioned approaches are the leaders in the international market.

The integration processes in the «education-science-production» system are able and bound to become an important part of the building of a sufficiently new environment in the country, required to feasibly solve the existing problem of the transition of the economy to the innovative way [2].

In this respect, the Triple Helix theory serves as one of the possible theories of the development of the innovative system in the Russian Federation. One of the factors in favour of this theory is that to create an innovative system, first of all, it is necessary to determine the leading participants of the innovative process, which is still an unsettled question in Russia. The reason of this is that so far, there is no comprehensively formulated idea of what theoretical principles can explain the general direction of the development of this area and lay the

foundation for any country to position its development, notwithstanding its peculiarities and special character.

Unfortunately, practice demonstrates that the implementation of the scientific production integration is a complicated process, with its specific features in case of each particular country. A system that is perfectly operational under conditions of one country may be disastrous for another. In the world history, there are multiple examples of unsuccessful attempts to directly transfer one country's business models to another country, without any adaptation. In USSR, there was such an unsuccessful experience that can be called «the corn strategy», when, following the visit of the USSR ministers' delegation, they organized a corn planting program even in the regions where crops had never been planted.

Thus, when building the innovative economy of Russia, it is essential not only to pay attention to a comprehensive examination of the experience of other countries that have already traveled the path of the innovative economy building, since it will help to avoid possible mistakes, but also to take into consideration the specific character of Russia. Also, if, other things being equal, the triple helix theory proves itself to be appropriate and there is a governmentally approved decision to develop the innovative economy of Russia according to the principles of the triple helix theory, then the theory will have to be adapted to the specific conditions of Russia before being applied.

2. The special features of the "Triple Helix" conception application under Russian economic conditions.

It is necessary to analyze the theoretical statements of the innovative systems conception in the developed countries in order to reveal the ones that can be applied to the formation of such a system in Russia. The investigation of the foreign countries' experience related to the creation of an innovative economy

requires taking into consideration special features of Russia. For the implementation of the "Triple Helix" theory, the most important features are the following ones:

Table 1. The triple helix model applied to the traffic facilities construction in Russia

Special features of innovation development in the Russian Federation		**Ways of solving the problem**
The dominant role of the State	When applied to Russia, the triple helix has its special features. The matter is that, unlike in most Western countries' universities, the dominant role here belongs to the State.	Thereupon, the "Triple Helix" model can be applied to Russia, but on a condition that it is approved on the governmental level. With the existing system, the interaction between the State, the business and the science should be initiated by the State directly.
The special character of the organization of the innovative science sphere State regulation in Russia	The special character of science in Russia consists in the fact that, unlike in most Western countries, it is necessary to deal not with universities, but with the Russian Academy of Sciences. In Russia, most research activities are performed not in universities (higher education institutions), basic research is mainly carried out in the Russian Academy of Sciences institutions, and that is where high skilled personnel (postgraduate students, doctoral candidates) training takes place in a small way, too.	It is necessary to create certain machinery to promote the transfer to «the business university» in the Russian Academy of Sciences
The special character of business	Companies are not interested in the creation of their own technology. In	It is necessary to adopt a program that contributes to the motivation of

routine in Russia.	Russia, it is more common to adopt the technology from foreign companies. The purchasing of foreign equipment has become the main type of the innovative activities for industrial businesses.	business communities to cooperate with universities. Programs aimed at the creation of «the industrial virus» [5]
The absence of the extensive innovation implementation culture [6].	In Russia, there is an unfavourable tendency for the representatives of some spheres to be reluctant ***to create the scientific production integration.*** The main argument provided to support this point of view is that such spheres as science and business do not have any intersections. The representatives of business communities principally aim at profit earning, while only a small number of small and medium-sized businesses demand scientific research. In general, companies try to build a business model without addressing themselves to research institutions	The dominant role should belong to the State, considering its special role in the Russian Federation. Only the State is capable of overcoming the existing stereotypes that the representatives of business and science have, it serves as a mediator in this system. Certain specific institutions, such as science parks, science cities, and business incubators, may serve as the main leverage for the achiement of this aim. The mentioned institutions serve as mediators between the State, the business and the science.

Thus, certain special features related to the implementation of the triple helix can be observed in the Russian Federation. It is necessary to take into consideration the mentioned peculiarities of the country's setup. However, it is useful to refer to the opinion of prof. Stanford William Miller, a participant in the Silicon valley creation. From his point of view, it is necessary to allow for different countries cultural aspects, but, along with it, it is possible to make the culture undergo some changes. A striking example of this statement is China, where some three decades ago every business served the State this or that way. Companies opened, but there was no such notion as «start-up». However, after

some relaxation of legal restrictions, the Chinese have become very enterprising and competitive. In the professor's opinion, the time required to transfer to the innovative economy depends on each particular country. As a result, he observed that Russia has good chances to develop faster compared to the US Silicon valley, since all advancements and changes are currently going much faster.

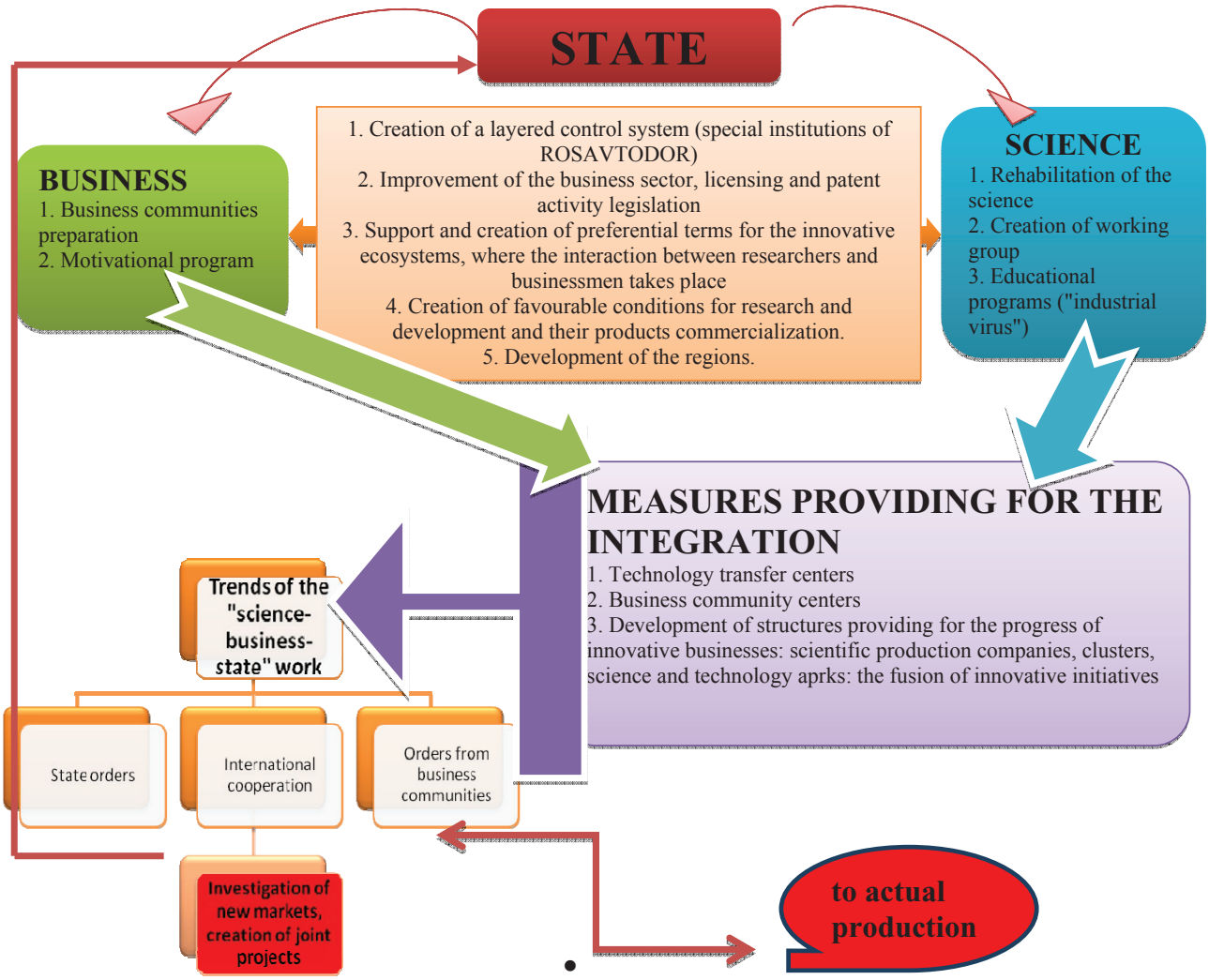
3. Application of the triple helix innovative methods to the construction of traffic facilities

This research intriduces a practical model of a step-by-step building of the scientific production integration and interaction within the framework of the triple helix conception developed by the author and illustrated by the example of the road construction sector of Russia. The introduced model can be applied to various economic activity-related sectors. However, it is necessary to allow for the peculiarities of every sector. The model presented in this work is directed towards the road construction sector. The choice of this sector is conditioned by the following:

State and development of the road construction sector have an exceptional importance for the Russian Federation. Along with other infrastructure sectors, the transport provides for the basic conditions of the society life activities, and is an important tool for the achievement of social, economic, and foreign-policy goals. Steady development of the transport secures the unity of the free market zone, the free transfer of goods and services, the competition and the freedom of economic activity, the maintenance of the integrity and national safety of Russia, the improvement of life conditions and standards of the people.

Transport is one of the main tools used to solve major political and economic tasks, and to secure the country's defence potential. Troubles accounted in transport development reinforce the infrastructure restrictions, may slow down the social development and endanger the formation of the common free market

zone. Fig 1. The triple helix model applied to the traffic facilities construction in Russia.



- **The first stage**

The first stage requires some influence of the State structures on the solution of the achievement goals:

1. Creation of a layered control system (special institutions of ROSAVTODOR)
2. Improvement of the business sector, licensing and patent activity legislation
3. Support and creation of preferential terms for the innovative ecosystems, where the interaction between researchers and businessmen takes place
4. Creation of favourable conditions for research and development and their products commercialization
5. Regional development [3].

- **The second stage**

The second stage requires taking measures aimed at the rehabilitation of the science in Russia, where its structure has greatly suffered from the country's transfer to the market system.

- **The third stage**

The third stage suggests taking measures to motivate the business communities representatives to:

1. invest funds in the creation of innovative products instead of borrowing foreign technology;
2. interact with the representatives of the scientific sphere.

- **The fourth stage**

With these three stages completed, it is assumed that the State and the representatives of business and science are ready to cooperate. However, it is required to take certain measures to consolidate this type of cooperation. Among such measures are the following:

1. Creation of technology transfer centers
2. Creation of business community centers
3. Development of structures providing for the progress of innovative businesses: scientific production companies, clusters, science and technology aprks: the fusion of innovative initiatives [4].

- **The fifth stage**

The products of the scientific production integration will implemented :

1. the actual production, where the introduction of the innovation starts;
2. the international scene. The cooperation between countries is established;
3. in case if the order initially emerged from the state structures, the products of the scientific production integration should return to the state structures bank, where the innovation will be applied to practical tasks [1].

The present model has been developed based on the analysis of the construction of a bridge to the Russkiy island (Vladivostok), unique in its complexity. It is being built over the offshore zone and covers the water surface of 1,6 km. The cost of the construction is 34 billion roubles. At present, there are only two cable-braced bridges in the world with the central span longer than 1 km — Sutong in China, and the Stonecutter's bridge in Hong Kong. The engineering decisions of the latter are very close to the ones of the Vladivostok bridge, currently under construction.

At present, there are certain problems related to the construction of this object. The main problems that the project's participants were faced with are caused by the fact that all participants work on their own and pursue their own interests: the government strives to decrease the costs, private developers want to get profit, researchers are interested in their calculations and do not collaborate with the others. All this means the lack of system. The process participants waste their time and money to deal with bureaucracy and corruption which are common in Russia. The application of the triple helix model does not apparently solve these problems, but if the participants work as a single system, it becomes much easier for them to solve problems. Besides, the use of the triple helix model helps the participants to interact with each other, to develop new abilities, to reach the new levels. The application of the triple helix model adapted to the Russian specific

features shall allow for the scientific production integration, as well as for an increase in the efficiency of the project and its timely termination.

4. Main conclusions.

The Triple Helix theory suits Russia well for the time when the country transfers from the raw materials economy to the innovative one. However, the transfer to the innovative economy requires investigation and consideration of the experience of the developed countries, as well as the application of some of their forms and methods. Still, it should be performed with a great caution due to the generally low efficiency of simple copying in the innovative sphere. This sphere is quite specific, and depends on the peculiarities and the existing potential of the country. The research materials demonstrate a very specific character of the scientific production sector in Russia, thus requiring a delicate and detailed approach to the problem of the application of other countries innovative development machinery in domestic practice.

A modified theory developed on the basis of a real bridge construction project in Vladivostok perfectly matches the conditions for the development of the traffic facilities construction sector. The application of this theory provides for the creation of the scientific production integration.

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